

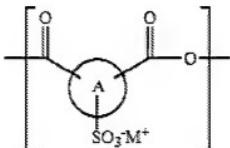
**Obviousness Claims Rejection**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

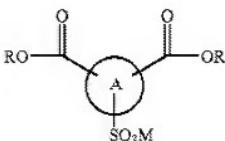
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-10 rejected under 35 U.S.C. 103(a) as being unpatentable over USP 4579936 in view of 5608032 see abstract and discussion below; or further in view of 5438878 with regard to claim 8.**

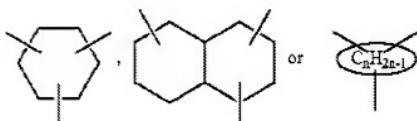
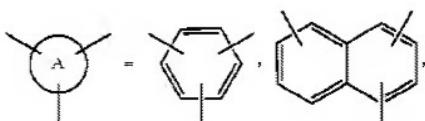
Applicants' claims 1,2, 3 and 10 are directed to a polyester resin comprising at least 85 Mol-% of polyethylene terephthalate and at least 0.01 Mol-%, but not more than 5.00 Mol-% of units of the formula (I)



wherein according to formula (II):



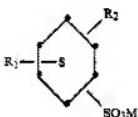
(with regard to claim 10)



wherein *n* is an integer from 3 to 10 and wherein  $M^+$  is an alkali metal ion, earth alkali metal ion, phosphonium ion or ammonium ion and wherein the polyester contains <5.0 wt.-% of diethylene glycol and wherein the polyester contains  $Na_2HPO_4$  in an amount such that the phosphorus content is 10 to 200 ppm (based on the weight of the polyester) and wherein the polyester is either free of or does not contain more than 9 ppm of  $NaH_2PO_4$ , and wherein the intrinsic viscosity is 0.6 to 1.0.

Note that the prior art **USP 4579936** discloses an ethylene terephthalate copolymer modified with an alicyclic sulfonate is disclosed which is useful in the production of biaxially oriented containers.

The modified ethylene terephthalate copolymer having an improved planar stretch ratio at a given inherent viscosity and relatively low diethylene glycol content, the copolymer having repeat units from 100 mol % of a glycol component comprising at least 80 mol % ethylene glycol and from 100 mol % of a dicarboxylic acid component comprising at least 80 mol % terephthalic acid or an ester-forming derivative thereof and about 0.1-5.0 mol % of a compound having a structure selected from



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wherein R<sub>1</sub> is H, alkyl from C<sub>1</sub>-C<sub>8</sub> or COOR and R<sub>2</sub> is COOR and wherein R is H, alkyl from C<sub>1</sub>-C<sub>8</sub> or O(CH<sub>2</sub>)<sub>2</sub>OH and



wherein R<sub>1</sub> is COOR and R<sub>2</sub> is H, alkyl from C<sub>1</sub>-C<sub>8</sub> or COOR and wherein R is H, alkyl from C<sub>1</sub>-C<sub>8</sub> or O(CH<sub>2</sub>)<sub>2</sub>OH and M in each of the above formulas is an alkali or alkaline earth metal ion.

Note in col. 3 lines 35-48 that the alicyclic sulfonate is the same as those moieties disclosed by applicants claims. The amounts also appear to fall within that which is claimed.

The polyester containing a modified ethylene terephthalate copolymer having an inherent viscosity of at least 0.55.

Although the recited "viscosity" is recited differently in **USP 4579936**, it must be completed with a recitation setting forth the parameters measuring same:

- 1.) the temperature at which the viscosity was measured;
- 2.) the particular solvent used;
- 3.) the concentration of the polymer in the solvent (unless *intrinsic* viscosity as in the present application).

In view of the above, the viscosities appear to within that which is claimed.

It is noted however, that in an aqueous solution the phosphorous moiety exists primarily as H<sub>2</sub>PO<sub>4</sub><sup>-</sup> or HPO<sub>4</sub><sup>-2</sup>, and is an effective *buffer* at physiological pH (7.0 - 7.5).

Note both the amounts of the polyethylene terephthalate is expressed differently in **USP 4579936** but appears to overlap or fall within that which is currently claimed. and the amount of sulfur containing moiety fall within the range as claimed.

Thus the reference **USP 4579936** discloses the claimed invention except for the use or amounts of Na<sub>2</sub>HPO<sub>4</sub> in ppm and the NaH<sub>2</sub>PO<sub>4</sub> in ppm.

However, **USP 5608032** discloses the use of a catalyst composition for use in a polycondensation reaction for making poly(ethylene terephthalate) from terephthalic acid comprising: (a) an antimony salt catalyst present in a range from about 10 to about 1,000 ppm; (b) a metal salt catalyst of at least one of cobalt, magnesium, zinc, manganese, calcium, and lead, present in a range from about 10 to about 500 ppm; and (c) a phosphorus salt co-catalyst selected from the group consisting of alkali metal phosphates, alkali metal phosphites, alkali metal hypophosphites and alkali metal polyphosphates, present in a range from about 10 to about 500 ppm; all amounts are based on the metallic or phosphorus element relative to the theoretical yield of the poly(ethylene terephthalate), by weight, to be made from the terephthalic acid. The catalyst composition was found to have increased the reaction rate in the production of poly(ethylene terephthalate), as well as improved the color of the produced product, by reducing the degree of yellowness in the final poly(ethylene terephthalate) product. Attenuation of the yellowish color indicates a reduction in the amount of undesired side reaction product.

It is noted also, that in an aqueous solution the phosphorous moiety exists primarily as H<sub>2</sub>PO<sub>4</sub><sup>-</sup> or HPO<sub>4</sub><sup>-2</sup>, and is an effective *buffer* at physiological pH (7.0 - 7.5).

Thus, it would have been obvious for one of ordinary skill in the art to use a phosphorous containing catalyst to for the polycondensation reaction in **USP 4579936** and further to employ the amounts as claimed since the amounts of phosphorous afford an effective buffer for stable reaction conditions. Note also that the recited "about" with regard to the amount of phosphorous in ppm permits some tolerance. See, e.g., In re Ayers, 69 USPQ 109 (CCAP 1946), where "at least about 10%" was held to be anticipated by a teaching of a content "not to exceed about 8%." Where close prior art

exists the line of demarcation can become blurred, however, with Applicant bearing the burden of establishing that the term is sufficiently clear to avoid the prior art. See Amgen v. Chugai, 927 F.2d 1200 (Fed. Cir. 1991), where the court could not determine which value between the prior art's value of 128,620 and the recited value of "about" 160,000 constituted infringement. Thus, the amounts of both the Na<sub>2</sub>HPO<sub>4</sub> in an amount such that the phosphorous content is 10 to 200 ppm and not contain more than 9 ppm of NaH<sub>2</sub>PO<sub>4</sub> would be inherent in view of the term "about".

One would have been motivated to employ the phosphorous moieties as disclosed in **USP 5608032** since the catalyst composition was found to have increased the reaction rate in the production of poly(ethylene terephthalate), as well as improved the color of the produced product, by reducing the degree of yellowness in the final poly(ethylene terephthalate) product.

**With regard to claim 4** wherein the attachments to the phenyl ring are in 1-, 3- and 5-position and the attachment to the naphthyl ring are in 2-, 4- and 6-position.

Note that col. 2 lines 55 to col. 3 lines 1-12 the **USP 4579936** reference discloses that the preferred polyethylene terephthalate useful in preparing the thermoplastic articles of this invention includes (a) polymers wherein at least about 97% of the polymer contains the repeating ethylene terephthalate units of the formula: as disclosed with any remainder being minor amounts of ester-forming components, and (b) copolymers of ethylene terephthalate wherein up to about 85 mol percent of the copolymer is prepared from the monomer units of diethylene glycol; propane-1,3-diol; butane-1,4-diol; polytetramethylene glycol; polyethylene glycol; polypropylene glycol; 1,4-cyclohexanedimethanol; neopentyl glycol and the like substituted for the glycol moiety in the preparation of the copolymer or up to about 20 mol % from monomer units of isophthalic; bibenzoic, naphthalene 1,4- or 2,6-dicarboxylic; adipic; sebacic; decane-

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1,10-dicarboxylic, diglycolic acid and the like, substituted for the acid moiety in the preparation of the copolymer.

**With regard to claim 5.** polyester resin wherein  $M^+$  is  $Li^+$ ,  $Na^+$  or  $K^+$ .

Note **USP 4579936** col. 3 lines 36-48 in view of **USP 5608032** as noted above.

**With regard to claim 6** wherein the  $Na^2HPO_4$  (disodium monohydrogenphosphate) is in the form of the dodeca-hydrate (12  $H_2O$ ).

Note **USP 4579936** in view of **USP 5608032** in the abstract discloses:

"A catalyst composition for use in a polycondensation reaction for making poly(ethylene terephthalate) from terephthalic acid comprising: (a) an antimony salt catalyst present in a range from about 10 to about 1,000 ppm; (b) a metal salt catalyst of at least one of cobalt, magnesium, zinc, manganese, calcium, and lead, present in a range from about 10 to about 500 ppm; and (c) a phosphorus salt co -catalyst selected from the group consisting of alkali metal phosphates, alkali metal phosphites, alkali metal hypophosphites and alkali metal polyphosphates, present in a range from about 10 to about 500 ppm; all amounts are based on the metallic or phosphorus element relative to the theoretical yield of the poly(ethylene terephthalate), by weight, to be made from the terephthalic acid. The catalyst composition was found to have increased the reaction rate in the production of poly(ethylene terephthalate), as well as improved the color of the produced product, by reducing the degree of yellowness in the final poly(ethylene terephthalate) product. Attenuation of the yellowish color indicates a reduction in the amount of undesired side reaction product."

Thus **USP 4579936** discloses the claimed invention except for the use of the phosphorous as a catalyst. The amount of phosphate is in the range of about 10 to 500 ppm. It is noted however, that in an aqueous solution the phosphorous moiety exists primarily as  $H_2PO_4^-$  or  $HPO_4^{2-}$ , and is an effective *buffer* at physiological pH (7.0 - 7.5).

Note also claim 1 etc. discussion above regarding the phosphorous content.

**With regard to claim 7** further comprising <10 Mol-% of modifying agents.

In col. 3 lines 13-20 the **USP 4579936** reference discloses that the polyethylene terephthalate polymer can include various additives that do not adversely affect the polymer in use such as stabilizers, e.g., antioxidants or ultraviolet light screening agents, extrusion aids, additives designed to make the polymer more degradable or combustible, such as oxidation catalyst, as well as dyes or pigments. The amount of minimum agent would have been obvious to the skilled artisan since, generally, it is prima facie obvious to determine workable or optimal values within a prior art disclosure through the application of routine experimentation. See In re Aller, 105 USPQ. Note that the reference clearly states that the additives must not adversely affect the polymer. Thus one of ordinary skill in the art would have been motivated to use a modifying agent since such is suggested in the reference and, generally, it is prima facie obvious to select a known material for incorporation into a composition, based on its recognized suitability for its intended purpose. See Sinclair & Carroll Co. v. Interchemical Corp., 325 US 327, 65 USPQ 297 (1945).

**With regard to claim 8** wherein the NSR is <10.

The **USP 4579936** discloses the claimed invention except stating that the NSR is less than 10. However, since the articles may both be used to prepare bottles the NSR is believed to fall within that which is claimed.

**USP 5438878** discloses the viscosity can be determined on a relative basis by relating it to the natural stretch ratio (NSR) of articles to be tested. That is, if the NSR of thermoplastic bottles is always determined under the same conditions for different

samples, the NSR will indicate the IhV (or intrinsic viscosity or molecular weight). In this way, for example, if an IhV of 0.72 is desired, the NSR of that article can be determined under given conditions (control). A graph for NSR plotted against IhV can be developed. Thermoplastic articles can then be stretched, either unilaterally or bilaterally, under the same conditions as the "control". If this ratio is the same as for the control, it will indicate the same IhV. Or, if this ratio is different, the IhV can be determined by referring to the graph.

Thus, it would have been obvious to one of ordinary skill in the art to employ a NSR ratio of less than 10 in that of **USP 4579936** since both may be used to prepare bottles and the viscosities of each overlap and thus need the same or similarly flexibility and stretching characteristics would be sought. Further, generally, it is prima facie obvious to determine workable or optimal values within a prior art disclosure through the application of routine experimentation. See In re Aller, 105 USPQ.

**With regard to claim 9** wherein the half time of crystallization is >150 sec at 200.degree. C.

Note example 1 state that crystallization has taken place

A 100-mL one-neck flask is charged with 23.2 g (0.119 mol) dimethyl terephthalate, 0.16 g (0.0006 mol) dimethyl 5-sodiosulfo-1,3-cyclohexanedicarboxylate, 14.88 g (0.24 m) ethylene glycol, and 0.14 cc of tetraisopropyl titanate solution (1.67% Ti in n-butanol, 100 ppm Ti based on polymer). The flask is equipped with a head having a nitrogen inlet, a take-off to remove volatile materials, and socket joint to accommodate a stirrer. A stirrer shaft runs through the socket joint and has a ball joint attached by pressure tubing to the shaft to seal the socket joint.

The flask is swept with a slow stream of nitrogen, stirred, and immersed in a molten metal bath preheated to 200.degree. C. Transesterification begins as soon as the flask contents reaches 200.degree. C. The water and methanol evolved are swept by the nitrogen stream into a condensing system. Heating and stirring continues at 200.degree. C. for one hour and 40 minutes and then the temperature of the bath is increased to 220.degree. C. Stirring and heating continue for one hour at these conditions and then the temperature of the bath is increased to 285.degree. C. At 285.degree. C. the nitrogen inlet is closed and a vacuum pump is applied. Within five minutes, a

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pressure .1torr<0.5 torr is attained. Stirring and heating under reduced pressure are continued for 30 minutes. At the end of this time, the polymer, which is clear and light yellow in color before crystallization, is removed from the bath, cooled, and recovered by breaking the flask. The polymer I.V. is 0.80, and mol % diethylene glycol is 3.0.

Nevertheless, generally, it is prima facie obvious to determine workable or optimal values within a prior art disclosure through the application of routine experimentation.

See In re Aller, 105 USPQ.

#### Obviousness-type double Patenting Rejection

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-10 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim of copending Application No.

10/583810. Although the conflicting claims are not identical, they are not patentably distinct from each other because although the resin of the present application is noted as having a particular form, especially with regard to a "container", the word container is inclusive of any object that may hold any object contained therein or thereon. And since the claims of the application have not specified any dimensions or form or structure the resin of the present application appears to be obvious or inherent over the "container" of the application. Since both of the applications use the same method , reactants, conditions and amounts, it is reasonable to conclude the containers would be the same or obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terressa M. Boykin whose telephone number is 571 272-1069. The examiner can normally be reached on Monday-Thursday 10-5:30 Friday (work at home).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Terressa M. Boykin/  
Primary Examiner, Art Unit 1796